

SIMATIC FAILSAFE 4.0

Predictive Failsafe: Improving the Safety of Industrial Environments

Pro²Future

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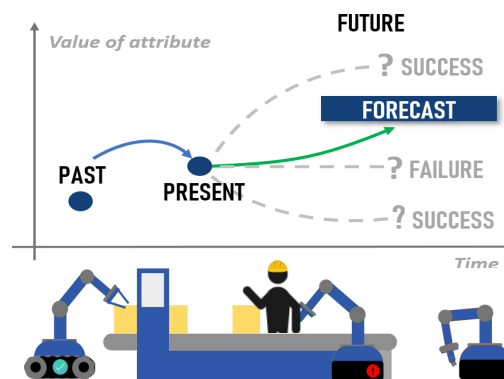
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MOTIVATION & GOALS

- Flexible and intelligent automation environments feature the seamless collaboration of workers and machines
- Traditional (static) fail-safe concepts are not suitable for such dynamic environments
- Developing of novel “data-driven” predictive fail-safe concepts allow to detect and prevent faults in dynamic production environments.
- This improves the safety and increases maintainability, availability and reliability of the automation system.



Project FactBox

Project Name Simatic Fail-Safe
 Project ID MFP 4.1.2-1
 Duration 36 Months
 Area 4.1
 Cognitive Products
 Project Lead
 Dr. Konrad Diwold

APPROACH

- Identify data sources which may contribute to maintainability, availability, reliability and safety!
- Apply advanced analytics to data obtained from the system (data analysis, predictive features...).
- Together with industrial failsafe devices create predictive failsafe systems.
- Predictive failsafe systems are able to mitigate or prevent failures.



CONTRIBUTION

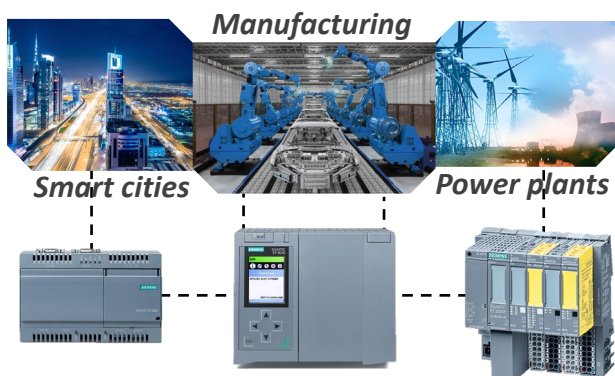
Scientific contribution

By exploring safety-critical devices we collected a lot of safety-relevant data that can be processed and analysed. Different algorithms are developed and applied to safety-related data in the goal to improve exiting safety architectures.

Economic contribution

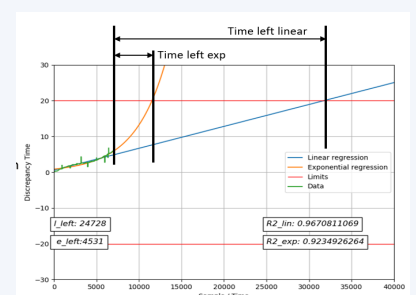
Reliability, maintainability, and availability are increased, thus reducing the costs and making maintenance easier. In addition, the predictive component allows the provisioning of new services and unique intelligent features for future automation systems.

SYSTEM ARCHITECTURE



Input/Output decision support:

- Discrepancy time
- Read-back time
- ADC instability



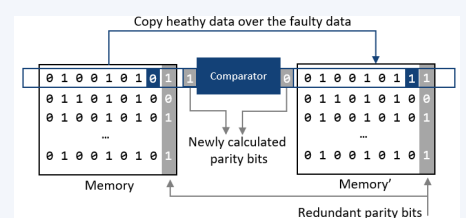
Temperature analysis :

- Change point detection
- Prediction
- Gradient



Memory management:

- Redundant Parity
- Just-in-time



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Acknowledgement: This work was supported by Pro²Future (FFG, 854184) and Siemens AG Österreich.

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